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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,281	12/21/2001	Chih-Chi Wang	06720.0079	4899

7590 04/06/2005  
Finnegan, Henderson, Farabow,  
Garrett & Dunner, L.L.P.  
1300 I Street, N.W.  
Washington, DC 20005-3315

EXAMINER
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AGHDAM, FRESHTEH N

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/024,281

Applicant(s)

WANG ET AL.

Examiner

Freshteh N. Aghdam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-27 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following invention is required under 35 U.S.C. 121:

- I. Claims 1-4, drawn to a method for training a time-domain equalizer having at least one coefficient comprising steps of estimating a channel; initializing the at least one coefficient of the time-domain equalizer; updating the at least one coefficient with the estimated channel; retaining the updated estimated channel; fixing the updated value of the at least one coefficient; calculating a modulated symbol based on the output of the equalizer; calculating the second value for the estimated channel; setting the estimated channel to the second value; and repeating the steps till a predetermined condition is reached, classified in class 375, subclass 229.
- II. Claims 5-16, drawn to an asymmetric digital subscriber line system comprising a channel for receiving the transmitted signal; a target channel for receiving the transmitted signal; two mixers coupled to the channel; a time-domain equalizer including plurality of coefficient coupled to the first mixer; a modulator; and a channel estimator, classified in class 375, subclass 222.
- III. Claims 17-27, drawn to a discrete multi-tone transceiver comprising a calculating means for estimating an effective channel in the frequency domain; an inverse Fast Fourier Transform means; and a rectangular windowing means, classified in class 375, subclass 260.

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The inventions are distinct, each from the other because of the following reasons:

Inventions I and II, I and III, and II and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP 806.05 c).

In the case of inventions I and II, the combination as claimed does not require the particulars of subcombination as claimed as shown by the lack of details in claim 5 of a time-domain equalizer to receive the output of the first mixer. The subcombination has separate utility such as minimizing frequency weighted ISI (i.e. Intersymbol Interference) power. In case of inventions I and III, the combination as claimed does not require the particulars of the subcombination as claimed as shown by the lack of details in claim 1 of the discrete multi-tone transceiver. The subcombination has separate utility such as minimizing frequency weighted ISI (i.e. Intersymbol Interference) power. In case of inventions II and III, the combination as claimed does not require the particulars of the subcombination as claimed as shown by the lack of details in claim 17 of the discrete multi-tone transceiver. The subcombination has separate utility such as DMT modulation in wireline applications.

Because these inventions are distinct for the reasons given above, the search required for Group III is not required for Groups I or II, the search required for Group II is not required for Groups I and III, and the search required for Group III is not required for Groups I and II, restriction for examination purposes as indicated is proper.

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A telephone call was made to Mr. Italiano (202) 408-4000 in February 2005 to request an oral election to the above restriction requirement, but did not result in an election being made.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).\

Freshteh Aghdam

March 31, 2005

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